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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/591,622 | 07/05/2007 | Lorrene Bayon | 979-253 | 3107 |

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| EXAMINER | |
|---|---|
| MOORE, MARGARET G | |
| ART UNIT | PAPER NUMBER |
| 1765 | |

| MAIL DATE | DELIVERY MODE |
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| 09/27/2011 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/591,622 | BAYON ET AL. | |
| | Examiner | Art Unit | |
| | MARGARET MOORE | 1765 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *13 September 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

5)☒ Claim(s) *1 to 21* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1 to 21* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The rejections below are maintained from the previous office action.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 to 4, 13 to 18 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Siegel et al. (as evidenced by the Nanophase Technologies data sheet for ZnO, attached).

The Examiner notes that Siegel et al. has an effective filing date of 8/30/03 and as such qualifies as prior art in this application.

Siegel et al. teaches nanocomposites with controlled electrical properties. This material includes a filler distributed in a polymeric matrix (abstract). As can be seen from column 5, lines 39 and on, the filler can be zinc oxide which results in a non-linear electrical resistance. Particularly note the working examples starting on column 9, line 65, which prepares a composition containing ZnO particles distributed in a polymeric matrix. The ZnO particles are from Nanophase Technologies. As evidenced by the attached data sheet from Nanophase Technologies, the ZnO particles are greater than 99% pure. In this manner the instant claims are anticipated by the composition prepared by Siegel et al.

For claims 3 and 18, note that these particles are approx. 50 nm.

For claims 13 to 17, please see columns 1 and 2 of Siegel et al.

5. Claims 12 and 20 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Siegel et al.

The ZnO particles in the claimed material appear to be inherently met by the ZnO particles in the teachings of Siegel et al. That is, both have the same particle size requirements, the same compositional requirements and both exhibit non-linear properties. Since the compositions appear to be the same, it follows that the properties associated therewith will inherently also be the same. In this manner the teachings of Siegel et al. inherently meet the instant claims. In addition note that Figure 1 shows materials which meet this resistivity requirement, indicating that the filler therein will inherently meet this requirement as well.

6. Claims 5 to 11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siegel et al.

For claims 7 to 11, Siegel et al. teach the addition of non-linear fillers, as noted supra, but in addition Siegel teaches the addition of other fillers, such as titanium dioxide as an insulating filler. See column 5, lines 20 to 38. On having ordinary skill in the art, desiring the benefits of both ZnO and titanium TiO would have been motivated to use both fillers in combination. Adjusting the amount of each filler would have been well within the skill of the ordinary artisan, in an effort to optimize and/or adjust the properties thereof. In this manner the instant claims are rendered obvious.

For claims 5 and 6, the Examiner notes that it is very common in the art to dope an electrically conductive material in an effort to modify the conducting properties thereof. One having ordinary skill in the art would have found it obvious to dope the ZnO filler in Siegel et al. with a commonly used doping agent, such as S or B, in an effort to modulate and/or optimize the electrical properties thereof in a known and predictable manner.

7. Applicants' traversal has been considered but is not deemed to be sufficient to establish novelty and/or unobviousness over the prior art.

Applicants argue that the data sheet does not teach that the ZnO is a non-linear filler. The Examiner relies on the totality of the teachings in Siegel for her determination that the ZnO filler therein is non-linear. Note that compositions containing this filler result in non-linear properties. This is a direct result of the fact that the fillers are non-linear. Note for instance column 5, line 45 and on, which teaches that it is the use of the ZnO filler which results in a non-linear resistance. This also teaches that the onset of non-linearity increases with the decreasing size of the filler. Also see column 11, line 28 and on, which teaches that the non-linearity is inherited from the ZnO particles. From this the Examiner believes she has sufficient basis upon which she can state that the ZnO particles therein are non-linear.

Applicants also refer to Figure 1 and conclude that from this one of ordinary skill in the art would be prompted to add heterogeneously distributed filler instead of a homogeneously distributed filler, as claimed in claim 1.

Applicants' remarks to this effect are not persuasive.

One reason these remarks are not persuasive is that applicants' arguments are not consistent with their claims. They argue that the claims are drawn to a homogeneously distributed filler. This is not true. The claims are drawn to a non-linear filler dispersed in a polymer matrix. This does not require a homogeneous dispersion. The claim requires that the ZnO be a homogeneous powder, but this is different from that which is stated in applicants' remarks.

Applicants also state that Siegel is only focused on heterogeneous distribution properties of ZnO. This also is not true. Figure 1, as well as a full reading of Siegel, shows a homogeneous distribution. See column 10 which teaches the preparation of the homogeneously distributed matrixes. See also the summary of the invention.

Thus Siegel et al. teach a polymer matrix in which a non-linear ZnO filler of at least 99% purity is dispersed. Applicants' traversal of patentability is not persuasive.

For claim 12, the Examiner maintains that given the totality of the teachings in Siegel et al., that the ZnO particles therein and those required by the claims have so

many common properties, and the fact that the compositions in Figure 1 have a resistivity meeting that claimed, is a sufficient basis upon which to conclude that the ZnO particle in Siegel et al. will meet that claimed.

Applicants argue that this property is particularly relevant when the material is used in medium or high voltage power cable. The composition in Siegel is also used in high voltage power cables, furthering the Examiner's belief that the ZnO in Siegel will inherently have this property.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARGARET MOORE whose telephone number is (571)272-1090. The examiner can normally be reached on Monday, Wednesday and Friday, 9 am to 5 pm.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Margaret G. Moore/
Primary Examiner, Art Unit 1765

Mgm
9/21/11